

[METHOD OF FORMING DUAL-IM-PLANTED GATE AND STRUCTURE FORMED BY THE SAME]

Abstract

A method of forming a dual-implanted gate and a structure formed by the same. Stack structures comprising a polysilicon layer, a sacrificial layer and a mask layer are formed over a substrate with a gate oxide layer thereon. A dielectric layer is formed over the substrate covering the stack structures. The dielectric layer is planarized to expose the upper surface of the mask layer in the first and the second structure. The mask layer is removed to form a plurality of trenches. The stack structures are selectively implanted using ions having different electrical states. The sacrificial layer is removed. Thereafter, a barrier layer is formed over the interior surface of the trenches. A metallic layer is formed over the substrate completely filling the trenches. The dielectric layer is removed to form a plurality of gate structures. Spacers may form on the sidewalls of the gate structures as well.